CPC-3713CLD3N

3U CompactPCI 主板

3U CompactPCI Board

Version: C00

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安全使用小常识

1. 在使用本产品前，请您务必仔细阅读产品说明书；
2. 对未准备安装的板卡，应将其保存在防静电保护袋中；
3. 在从防静电保护袋中拿出板卡前，应先将手置于接地金属物体上一会儿（比如 10 秒钟），以释放身体及手中的静电；
4. 在拿板卡时，需佩戴静电保护手套，并且应该养成只触及其边缘部分的习惯；
5. 为避免人体被电击或产品被损坏，在对板卡进行拔插或重新配置时，须先关断交流电源；
6. 在需对板卡或整机进行搬动前，须先关断交流电源；
7. 对整机产品，需增加或减少板卡时，务必先关断交流电源；
8. 当您需连接或拔除任何设备前，须先关断交流电源；
9. 为避免频繁开关机对产品造成不必要的损伤，关机后，应至少等待 30 秒后再开机。

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第一章 产品介绍

简介

本主板采用 Intel® Atom™平台 N455 1.66GHz 高性能处理器,集成北桥+ICH8M Chipset 芯片。 Atom™ N455 处理器采用 45nm 工艺，单核双线程处理机制，可通过 Intel® Turbo Boost 技术提升处理性能，512KB SmartCache，处理器额定功耗为 6.5W。N455 处理器集成 DDR3 667MHz 内存控制器，集成显卡控制器，集成 PCI Express 控制器。

本主板板载 CPU，板载 2G 667MHz DDR3，支持 CF 卡存储（CPC-3713CLD3N 主板不支持）及 SATA 存储，多网口，串口，及 USB 接口。产品硬件、结构定义遵从铁路领域产品应用规范,满足航天及军工等领域商用计算机和铁路整机无风扇计算机两种应用模式。

机械尺寸、重量与环境

- 外形尺寸：169.3mm（长）×100mm（宽）×15.5mm（高）
- 净重：0.58Kg
- 工作环境：

  温度：-20℃～70℃；

  湿度：10%～95%（非凝结状态）；
- 贮存环境：

  温度：-40℃～85℃；

  湿度：10%～95%（非凝结状态）；

典型功耗

典型功耗是基于以下配置闲置状态的数值。

CPU：Intel® Atom™ N455 1.66GHz

内存：DDR3 667 K4B2G0846D-HCH9 2GB

操作系统：中文 Windows XP/SP3

- +5V@1.18A；+5%/-3%；
- +3.3V@2.6A；+5%/-3%；
- +12V@0.04A；+5%/-3%。

微处理器

板载Intel® Atom™ N455 CPU，DMI:2.5GT/S，采用45nm 工艺，单核双线程处理机制，主频1.66GHz，额定功耗为6.5W。

芯片组

Intel® ICH8M Chipset

系统内存

板载 DDR3 SDRAM 667MHz 内存颗粒，支持单通道功能。单条内存通道可支持最大内存容量 2GB。

显示功能

- 采用Atom™ N455 处理器集成的Intel® GMA 显示芯片；
- 支持独立双显CRT+LVDS；
- 支持独立VGA输出，VGA支持的最大分辨率及刷新率为1400×1050@60Hz，VGA信号引出到J2连接器；
- 支持独立LVDS输出，LVDS支持的最大分辨率为1280×800；
- CRT+LVDS显示组合有：前面板VGA+LVDS或后IO VGA+LVDS；VGA输出可由BIOS选项来设置，默认为前面板（Front panel）输出，CPC-3713CLD3N-T版本固定为后IO VGA输出。具体见BIOS设置指南。

网络功能

提供1路10/100/1000Mbps以太网到主板前面板，2路独立的10/100/1000Mbps以太网信号通过J2连接器到后IO，带传输指示灯信号。

电源特性

采用CPCI电源，支持S0。

扩展总线

提供7个32位CPCI插槽，兼容Compact PCI标准。

Watchdog功能

- 支持 255 级，可编程按分或秒；
- 支持看门狗超时中断或复位系统。

操作系统

- 支持操作系统：Windows XP、Vxworks、linux。

I/O接口

- 提供 3 个串口，1 路到前面板，2 路串口信号通过 J2 连接器到后 IO，支持 RS-232。
- 提供 3 个 SATA 接口，1 路板载，2 路 SATA 信号通过 J2 连接器到后 IO。
- 提供 4 个 USB2.0 接口，2 路到前面板，2 路 USB2.0 信号通过 J2 连接器到后 IO。
- 1 个 PS/2 接口通过后 IO 引出；
- 提供 1 个 CF 卡接口（CPC-3713CLD3N 主板不支持）。

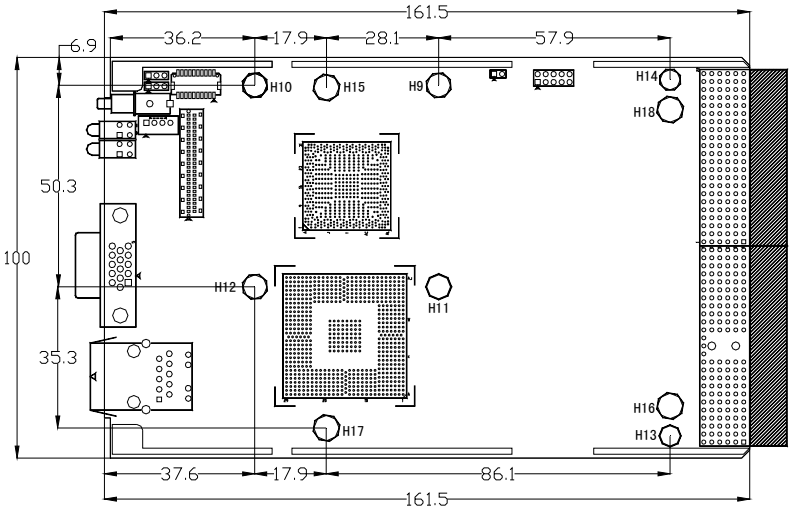
提示：如何识别报警声

1、长鸣声为系统内存出错。

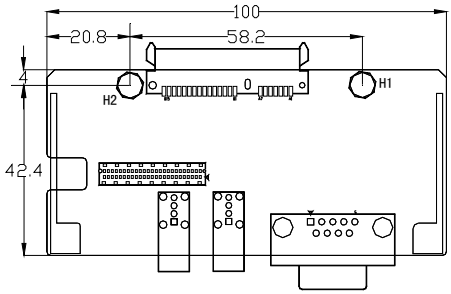
2、短“嘀”一声为开机声。

第二章　安装说明

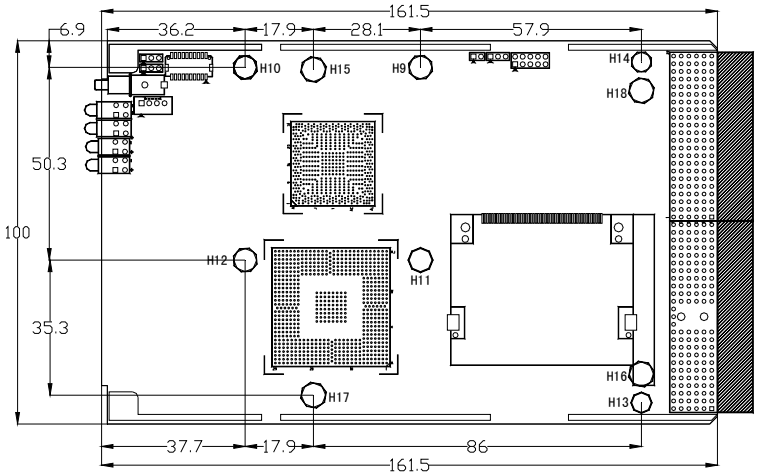
产品外形尺寸图



CPC-3713CLD3N



CPC-3713CLD3N-2



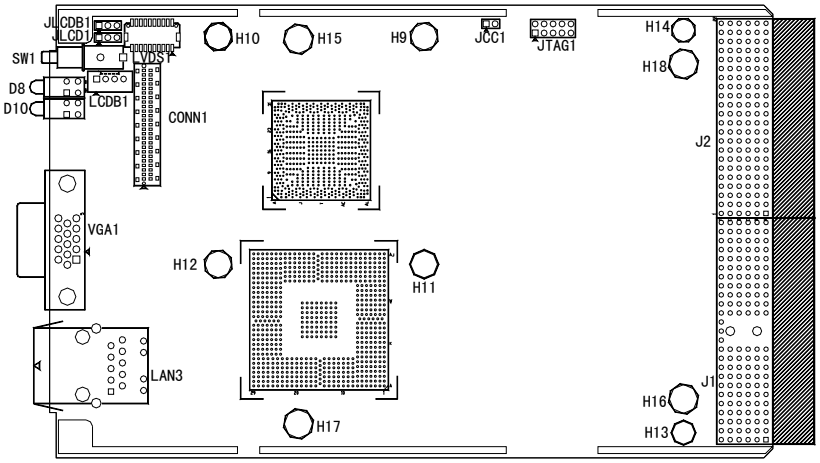
CPC-3713CLD3N-T

单位：mm

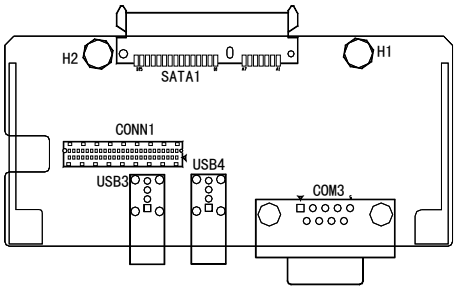
警告！

请务必选择合适的螺钉和使用正确的安装方法（包括板卡定位、CPU、散热器等安装），否则可能损坏板。此板推荐 H9-H12,使用Φ6×8LXM2.5 十字螺母，H15-H18, 使用盘头 M3×5/GB-T818-1985 螺钉。

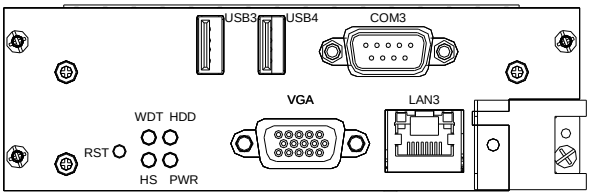
接口位置示意图

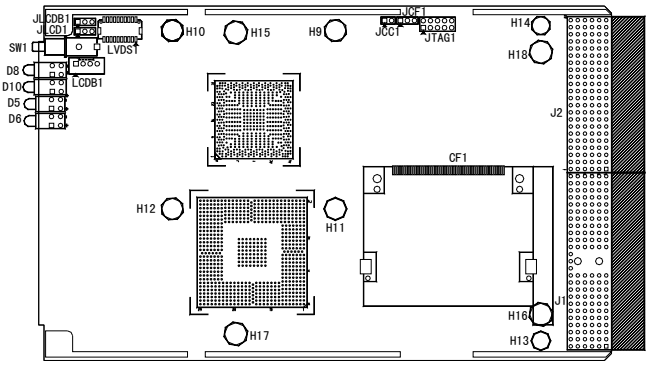


CPC-3713CLD3N

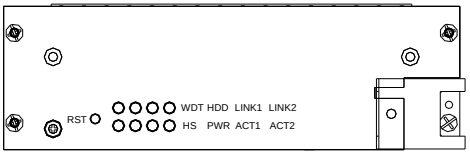


CPC-3713CLD3N-2

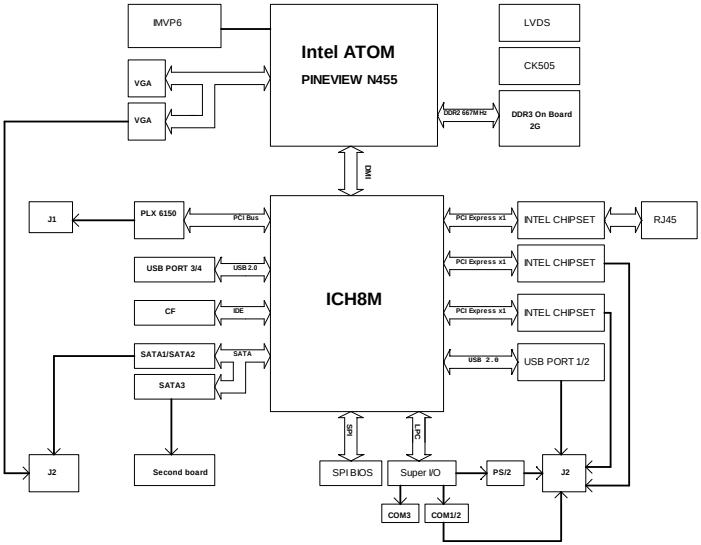




CPC-3713CLD3N-T



架构图



提示：如何识别跳线、接口第一脚

1、观察插头、插座旁边的文字标记，通常用“1”或加粗的线条或三角符号表示。

2、看看背面的焊盘，通常方型焊盘为第一脚。

跳线设置

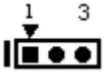
1. JCC1：CMOS内容清除/保持设置（脚距：2.0mm）

CMOS由板上钮扣电池供电。清CMOS会导致永久性消除以前系统配置并将其设为原始（工厂设置）系统设置。其步骤:(1)关闭计算机，断开电源；(2)瞬间短接JCC1插针；(3)开计算机；(4)启动时按屏幕提示按键进入BIOS设置，重新加载最优缺省值；(5)保存并退出设置。设置方式如下：

JCC1

设置	功能
1-2 开路	正常工作状态(Default)
1-2 短路	清除 CMOS 内容，所有 BIOS 设置恢复成出厂值。

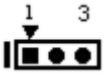
2. JCF1:CF卡工作电压选择（脚距：2.0mm，CPC-3713CLD3N主板无此跳线）



JCF1

设置	功能
1-2 短路	+3.3V
2-3 短路	+5V(Default)

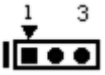
3. JLCD1:LCD工作电压选择（脚距：2.0mm）



JLCD1

设置	功能
1-2 短路	+3.3V(Default)
2-3 短路	+5V

4. JLCDB1:LCD背光工作电压选择（脚距：2.0mm）

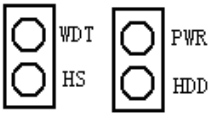


JLCDB1

设置	功能
1-2 短路	+12V(Default)
2-3 短路	+5V

5.　本板提供1个复位按钮（SW1）

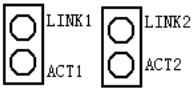
指示灯



D8，D10

灯	状态	描述
硬盘	OFF	硬盘或 CF 卡闲置
	ON	硬盘或 CF 卡运转
电源	OFF	电源失败
	ON	电源正常
热交换	OFF	正常工作状态
	ON	正处于热交换状态中
看门狗	OFF	看门狗未操作
	ON	看门狗正在操作当中

后 IO CPC-RP3713-T 网络指示灯（CPC-3713CLD3N 主板无此指示灯）

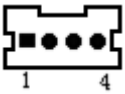


D5，D6

灯	描述
LAN1 LINK	后 IO CPC-RP3713-T 网口 1 网络指示灯
LAN1 ACT	后 IO CPC-RP3713-T 网口 1 网络指示灯
LAN2 LINK	后 IO CPC-RP3713-T 网口 2 网络指示灯
LAN2 ACT	后 IO CPC-RP3713-T 网口 2 网络指示灯

LCD背光控制接口

本板提供1个1×4Pin LCD背光控制接口（脚距：2.54mm），管脚定义如下：



LCDB1

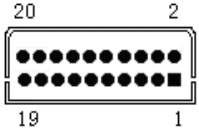
管脚	信号名称
1	VCC_LCDBKLT
2	NC
3	LCD_BKLTEN
4	GND

VCC_LCDBKLT---背光电源（电流限制在 1A 以下）；

LCD_BKLTEN ---背光使能，高有效（此板该信号由北桥直接输出，CMOS 输出，电压幅值为 0V-3.3V）。

LVDS接口

本板提供1个单通道18bit LVDS接口(脚距:1.0 mm)。



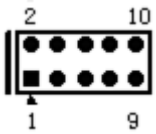
LVDS1

管脚	信号名称	管脚	信号名称
1	LVDS_D0+	2	LVDS_D0-
3	GND	4	GND
5	LVDS_D1+	6	LVDS_D1-
7	GND	8	GND
9	LVDS_D2+	10	LVDS_D2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	NC	18	NC
19	VDD	20	VDD

注：本主板用到LVDS插座型号为DF20G-20DP-1V；对应端子的型号F20A-20DF-1C。

JTAG接口

通过板上的JTAG1（脚距：2.0mm）烧录CPLD所需资料。

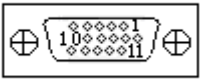


JTAG1

管脚	信号名称	管脚	信号名称
1	TCK	2	GND
3	TDO	4	VCC
5	TMS	6	NC
7	NC	8	NC
9	TDI	10	GND

显示接口

本板提供1个15芯D型VGA显示器接口。(CPC-3713CLD3N-T主板无此接口)



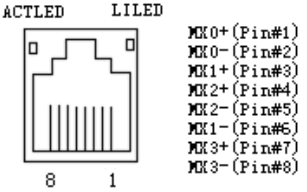
VGA(VGA1)

管脚	信号名称	管脚	信号名称
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

网络接口

本板提供一个10/100/1000Mbps网络接口(CPC-3713CLD3N-T主板无此接口），LILED和ACTLED是以太网接口两边的LED，以显示LAN的活动和传输状态。请参考以下每一个LED的状态描述：

MX0,MX0-：正/负数据通道 0	MX1,MX1-：正/负数据通道 1
MX2,MX2-：正/负数据通道 2	MX3,MX3-：正/负数据通道 3
ACTLED：网络活动状态灯	LILED：网络链路状态灯



LAN3

ACTLED（单色：绿色灯）	网络活动指示状态		LILED（双色：橙绿双灯）	网络速度指示状态
			绿色	1000Mbps
闪烁	有数据传		橙色	100Mbps
灭	无数据传		灭	10Mbps

注：网口不支持唤醒功能。

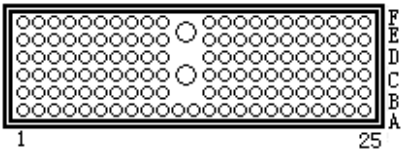
Compact Flash接口

CF卡在系统中处于Master状态。Compact Flash 插槽的引脚定义如下(图中标识为CF1，CPC-3713CLD3N主板无此接口)。

管脚	信号名称	管脚	信号名称
1	GND	26	CD1#
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS0#	32	CS1#
8	GND	33	VS1#
9	ATASEL#	34	IOR#
10	GND	35	IOW#
11	GND	36	WE#
12	GND	37	IRQ
13	VCC	38	VCC
14	GND	39	CSEL#
15	GND	40	VS2#
16	GND	41	RESET#
17	GND	42	IORDY
18	A2	43	DREQ
19	A1	44	DACK#
20	A0	45	DASP#
21	D0	46	ATA66_DET
22	D1	47	D8
23	D2	48	D9
24	WP/IOCS16#	49	D10
25	CD2#	50	GND

Compact PCI接口

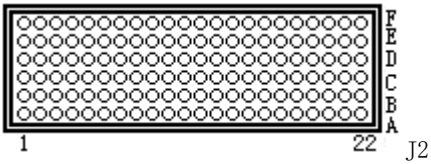
J1接头引脚信号定义



J1

管脚	信号名称					
	A	B	C	D	E	F
1	+5V	-12V	TRST#	+12V	+5V	GND
2	TCK	+5V	TMS#	TDO	TDI	GND
3	INTA#	IRQB#	INTC#	+5V	INTD#	GND
4	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND
5	NC	NC	PCI_RST#	GND	GNT0#	GND
6	REQ0#	PCI_PRESENT#	+3.3V	CLK0	AD31	GND
7	AD30	AD29	AD28	GND	AD27	GND
8	AD26	GND	V(I/O)	AD25	AD24	GND
9	C/BE3#	GND	AD23	GND	AD22	GND
10	AD21	GND	+3.3V	AD20	AD19	GND
11	AD18	AD17	AD16	GND	C/BE2#	GND
12	KEY AREA					
13						
14						
15	+3.3V	FRAME#	IRDY#	BD_SEL#	TRDY#	GND
16	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
17	+3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
18	SERR#	GND	+3.3V	PAR	C/BE1#	GND
19	+3.3V	AD15	AD14	GND	AD13	GND
20	AD12	GND	V(I/O)	AD11	AD10	GND
21	+3.3V	AD9	AD8	M66EN	C/BE0#	GND
22	AD7	GND	+3.3V	AD6	AD5	GND
23	+3.3V	AD4	AD3	+5V	AD2	GND
24	AD1	+5V	V(I/O)	AD0	ACK64#	GND
25	+5V	REQ64#	ENUM#	+3.3V	+5V	GND

J2接头引脚信号定义

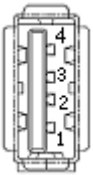


管脚	信号名称					
	A	B	C	D	E	F
22	GA4	GA3	GA2	GA1	GA0	GND
21	CLK6	GND	USB3P/bi	USB4P/bi	+5V_USB	GND
20	CLK5	GND	USB3N/bi	USB4N/bi	+5V_USB	GND
19	GND	GND	SMBB_SDA	SMBB_SCL	NC	GND
18	2RXD/in	2DCD#/in	2DTR#	2CTS#/in	3CTS#/in	GND
17	2TXD/out	2RTS#/in	PRST#	REQ6#	GNT6#	GND
16	2DSR#/in	+5V	DEG#	GND	3RI#/in	GND
15	LAN2_LINK_100#	+5V_KM	FAL#	REQ5#	GNT5#	GND
14	LAN2_TX0+	LAN2_TX0-	3RTS#/out	LAN2_TX2+	LAN2_TX2-	GND
13	LAN2_TX1+	LAN2_TX1-	3RI#/in	LAN2_TX2+	LAN2_TX3-	GND
12	LAN3_TX0+	LAN3_TX0-	3TXD	LAN3_TX3+	LAN3_TX2-	GND
11	LAN3_TX1+	LAN3_TX1-	3DCD#/in	LAN3_TX3+	LAN3_TX3-	GND
10	GND	GND	VGA_RED/out	2DTR#/out	NC	GND
9	SATA2TXP/OUT	3TXD/out	VGA_HSYNC/out	GND	SATA3TXP/OUT	GND
8	SATA2TXN/OUT	3DSR#	VGA_BLUE/out	MS_DATA	SATA3TXN/OUT	GND
7	GND	LAN2_LINK_1000#	VGA_DDC_DAT	MS_CLK	NC	GND
6	SATA2RXP/IN	LAN2_ACT#	VGA_GREEN/out	KB_DATA	SATA3RXP/IN	GND
5	SATA2RXN/IN	GND	VGA_VSYNC/out	KB_CLK	SATA3RXN/IN	GND
4	VI/O	LAN3_LINK_100#	VGA_DDC_CLK/out	LAN3_LINK_1000#	LAN3_ACT#	GND
3	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

CPC-3713CLD3N-2 安装说明

USB接口

本板提供2个标准的USB接口。

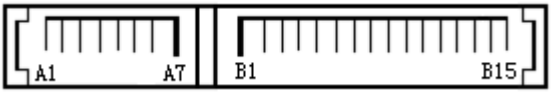


USB3，USB4

管脚	信号名称
1	+5V
2	USB_Data-
3	USB_Data+
4	GND

SATA接口

本板提供1个7+15Pin的串行ATA接口。



SATA1

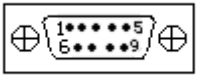
管脚	信号名称	管脚	信号名称
A1	GND	B5	GND
A2	TX+	B6	GND
A3	TX-	B7	+5VL
A4	GND	B8	+5V
A5	RX-	B9	+5V
A6	RX+	B10	GND
A7	GND	B11	GND
B1	+3.3V	B12	GND
B2	+3.3V	B13	+12VL
B3	+3.3VL	B14	+12V
B4	GND	B15	+12V

板间连接器

CONN1在板背面，CPC-3713CLD3N-T主板无此接口。

管脚	信号名称	管脚	信号名称	管脚	信号名称
A1	USB_OC01#	A2	GND	A3	USB_DN0
A4	GND	A5	USB_DN1	A6	GND
A7	SATA_RXP2	A8	GND	A9	SATA_TXP2
A10	GND	A11	COM1_RXD	A12	COM1_DTR#
A13	COM1_RTS#	A14	COM1_DSR#	A15	NC
A16	GND	A17	NC	A18	NC
A19	+3.3V	A20	+3.3V	A21	NC
A22	NC	A23	NC	A24	+5V
A25	+5V	B1	NC	B2	GND
B3	USB_DP0	B4	GND	B5	USB_DP1
B6	GND	B7	SATA_RXN2	B8	GND
B9	SATA_TXN2	B10	GND	B11	COM1_CTS#
B12	COM1_RI#	B13	COM1_DCD#	B14	COM1_TXD
B15	NC	B16	GND	B17	NC
B18	NC	B19	+12V	B20	+12V
B21	NC	B22	NC	B23	+5V
B24	+5V	B25	+5V	G1	GND
G2	GND	G3	GND	G4	GND
G5	GND	G6	GND	G7	GND
G8	GND	G9	GND	G10	GND
G11	GND	G12	GND	G13	GND
G14	GND	G15	GND	G16	GND
G17	GND	G18	GND		

标准 DB9 串口



COM3

管脚	信号名称
1	DCD#
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

注：串口不支持唤醒功能。

第三章 BIOS功能介绍

BIOS（Basic Input and Output System：基本输入输出系统）固化在 CPU 板上的闪存存储器中，主要功能包括：初始化系统硬件，设置各系统部件的工作状态，调整各系统部件的工作参数，诊断系统各部件的功能并报告故障，给上层软件系统提供硬件操作控制接口，引导操作系统等。BIOS 提供用户一个菜单式的人机接口，方便用户配置各系统参数设置，控制电源管理模式，调整系统设备的资源分配等等。

正确设置 BIOS 各项参数，可使系统稳定可靠地工作，同时也能提升系统的整体性能。不适当的甚至错误的 BIOS 参数设置，则会使系统工作性能大为降低，使系统工作不稳定，甚至无法正常工作。

BIOS参数设置

每当系统接通电源，正常开机后，便可看见进入 BIOS 设置程序提示的信息。此时(其它时间无效)，按下提示信息所指定的按键（通常为<Del>键）即可进入 BIOS 设置程序。

CMOS 中 BIOS 设置内容被破坏时，系统也会要求进入 BIOS 设置或选择某种默认设置值。

通过BIOS修改的所有设置值都保存在系统的CMOS存储器中，该CMOS存储器由电池供电，即使切断外部电源，其内容也不会丢失，除非执行清除CMOS内容的操作。

注意！BIOS的设置直接影响到电脑的性能，设置错误的参数将造成电脑的损坏，甚至不能开机，请清CMOS后再使用BIOS内置缺省值来恢复系统正常运行。

由于本公司不断研发更新BIOS，其设置界面也会略有不同，以下的画面供您参考，有可能跟您目前所使用的BIOS设置程序不完全相同。

BIOS基本功能设置

当SETUP程序启动之后，您可以看到CMOS Setup Utility主画面如下：

BIOS SETUP UTILITY	
System Overview	←→ Select Screen ↑ ↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
Processor Type : Intel(R) Atom(TM) CPU N455 @ 1.66GHz Speed :1666MHz System Memory Size :2039MB System Time [00:47:55] System Date [Mon 01/11/2010]	
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◆ **Main**

➢ **System Time**

选择此选项，用< + > / < - >来设置目前的时间。以时/分/秒的格式来表示。各项目合理的范围是：Hour/时(00-23)， Minute/分(00-59)，Second/秒(00-59)。

➢ **System Date**

选择此选项，用< + > / < - >来设置目前的日期。以月/日/年的格式来表示。各项目合理的范围是: Month/月(Jan.-Dec.)， Date/日(01-31)，Year/年(最大至 2099)， Week/星期(Mon.～ Sun.)。

◆ **Advanced**

BIOS SETUP UTILITY	
Advanced Settings	Configure CPU
WARNING:Setting wrong values in below sections may cause system to malfunction ►CPU Configuration ►IDE Configuration ►Super I/O Configuration ►Hardware Health Configuration ►USB Configuration ►Clock Generator Configuration	←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

➢ **CPU Configuration**

BIOS SETUP UTILITY	
Configure advanced CPU settings Brand String: Intel(R) Atom(TM) CPU N455 @ 1.66GHz Frequency; :1.66GHz FSB Speed; :667MHz Cache L1; :24 KB Cache L2; :512 KB Ratio Actual Value :10 Hyper Threading Technology [Enabled]	←→ Select Screen ↑ ↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc	

● **Hyper Threading Technology**

Intel Hyper Threading Technology功能的控制开关。

➢ **IDE Configuration**

BIOS SETUP UTILITY		
IDE Configuration		
ATA/IDE Configuration	[Enhanced]	
Configure SATA as	[IDE]	
▶Primary IDE Master	:[Not Detected]	←→ Select Screen
▶Primary IDE Slave	:[Not Detected]	↑ ↓ Select Item
▶Secondary IDE Master	:[Not Detected]	+ - Change Field
▶Secondary IDE Slave	:[Not Detected]	Tab Select Field
▶Third IDE Master	:[Not Detected]	F1 General Help
▶Third IDE Slave	:[Not Detected]	F10 Save and Exit
		ESC Exit
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- **ATA/IDE Configuration**

此选项用来配置ATA的工作模式，Enhanced和Compatible分别对应增强模式和兼容模式。

- **Configure SATA as**

SATA控制器的类型选择，对应IDE,RAID和AHCI选择项，仅在ATA/IDE Configuration为增强模式时才支持RAID,AHCI。

RAID,AHCI功能同时需要硬件芯片和操作系统支持。

Note: RAID supported on ICH8M-E only

- **Legacy IDE Channels**

配置兼容模式下IDE通道类型，对应SATA Only，SATA Pri，PATA Sec和PATA Only选择项。

- **Primary～Third IDE Master/Slave**

*** Type**

Not Installed：系统没有检测到IDE设备

AUTO：系统开机自动检测IDE参数

CD/DVD：用于ATAPI CDROM

ARMD：用于各种模拟IDE设备

＊LBA/Large Mode

用于设置是否支持LBA模式。

＊Block(Multi-sector Transfer)

用于设置是否支持多扇区同时传输的功能。

＊PIO Mode

用于PIO模式设置。

＊DMA Mode

用于DMA模式设置。

＊S.M.A.R.T

此选项用于设置是否启用硬盘S.M.A.R.T功能，只对支持该功能的硬盘有效。

＊32Bit Data Transfer

此选项用于使能32位的硬盘访问模式，可以使硬盘读写速度达到最佳。

- **Super I/O Configuration**

BIOS SETUP UTILITY		
Configure Super I/O Chipset		Allows BIOS to Enable or Disable Floppy Controller.
Floppy A	[Disabled]	
OnBoard Floppy Controller	[Enabled]	
Serial Port1 Address	[3F8]	←→ Select Screen
Serial Port1 IRQ	[IRQ4]	↑ ↓ Select Item
Serial Port2 Address	[2F8]	+ - Change Field
Serial Port2 IRQ	[IRQ4]	Tab Select Field
Serial Port3 Address	[3E8]	F1 General Help
Serial Port3 IRQ	[IRQ3]	F10 Save and Exit
		ESC Exit
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- **Floppy A**

  软盘驱动器类型配置。

- **OnBoard Floppy Controller**

  用于使能软驱控制器。

- **Serial Port 1～3 Address**

  设定主机板上串口1到3的地址。

- **Serial Port 1～3 IRQ**

  设定主机板上串口1～3的IRQ。

➢ **Hardware Health Configuration**

BIOS SETUP UTILITY		
Hardware Health Configuration		Enables Hardware Health Monitoring Device
System Temperature	: 30℃/86℉	
CPU Temperature	: 37℃/98℉	
Vcore	: 1.136 V	←→ Select Screen
V3.3	: 3.296 V	↑ ↓ Select Item
V5.0	: 5.094 V	+ - Change Field
V12.0	: 12.196 V	Tab Select Field
VBAT	: 3.152 V	F1 General Help
		F10 Save and Exit
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- **System Temperature**

  当前系统温度，一般主板上有热敏电阻监测。

- **CPU Temperature**

  当前CPU温度。CPU的温度由板上的温度传感器监测。

- **CPUFAN1**

  当前CPU风扇转速。

- **Vcore**

  CPU核心电压。

- **V3.3/ V5.0/ V12.0**

  开关电源输出电压。

- **VBAT**

  电池电压监测。

➢ **USB Configuration**

BIOS SETUP UTILITY	
USB Configuration	Enables USB host controllers.
USB Devices Enabled :	←→ Select Screen
1 Keyboard, 1 Drive	↑ ↓ Select Item
USB Function [4 USB Ports] USB 2.0 Controller [Enabled] Legacy USB Support [Auto] ►USB Mass Storage Device Configuration	+ - Change Field F1 General Help F10 Save and Exit ESC Exit
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- **USB Function**

  此选项设置USB控制器的数量，即确定支持几个USB控制器，通常一个控制器有两个USB接口。

- **USB 2.0 Controller**

  此选项用来选择是否支持USB 2.0 控制器。

- **Legacy USB Support**

  此选项用于支持传统的USB设备（键盘，鼠标，存储设备等），当该项设为Enabled时，即使不支持USB的操作系统如DOS下也能使用USB设备。

- **USB Mass Storage Device Configuration**

  此选项用于配置USB块存储设备，其中包括Reset 延时设置及枚举类型。

➢ **Clock Generator Configuration**

BIOS SETUP UTILITY	
Configure Clock Generator	←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
Spread Spectrum [Enabled]	
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● **Spread Spectrum**

此选项用来控制时钟信号的展频功能。

◆ **Chipset**

BIOS SETUP UTILITY	
Advanced Chipset Settings	
WARNING: Setting wrong values in below sections may cause system to malfunction. North Bridge Chipset Configuration DRAM Frequency [Auto] Configure DRAM Timing by SPD [Enabled] Boot Display Device [CRT+LVDS] Flat Panel Type [800X600/S/18/G104S] UserDefine Panel Type [Disabled] South Bridge Chipset Configuration VGA Port Switch [Front Panel]	←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

➢ **DRAM Frequency**

配置DRAM的频率，此处建议使用自动，手动更改配置可能会因为DRAM不支持而不开机。

- **Configure DRAM Timing by SPD**

BIOS按照SPD芯片上的内容配置SDRAM内存的时序。绝大多数内存条上有一个保存内存时序和容量等参数的一个小芯片，即SPD芯片。

- **Boot Display Device**

此选项用于选择开机默认的显示输出设备。

- **Flat Panel Type**

此选项用于选择LVDS Panel的类型。

- **UserDefine Panel Type**

此选项用于给用户设置自定义的LVDS Panel的类型。

- **VGA Port Switch**

此选项用于控制前面板或者是后面板的VGA接口显示功能。

◆ **PCIPnP**

BIOS SETUP UTILITY		
Advanced PCI/PnP Settings		
WARNING:Setting wrong values in below sections may		
IRQ3	[Available]	
IRQ4	[Available]	←→ Select Screen
IRQ5	[Reserved]	↑ ↓ Select Item
IRQ7	[Available]	+ - Change Field
IRQ9	[Available]	F1 General Help
IRQ10	[Available]	F10 Save and Exit
IRQ11	[Available]	ESC Exit
IRQ14	[Available]	
IRQ15	[Available]	
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- **IRQ3～15**

此系列选项用以指定对应IRQ号是PNP方式还是保留给ISA使用。

◆ **Boot**

BIOS SETUP UTILITY		
Boot Settings		←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
Quick Boot	[Enabled]	
Quiet Boot	[Disabled]	
Waite For ‘F1’ If Error	[Disabled]	
Boot Device Priority		
1st Boot Device	[USB:aigo USB DISK]	
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➢ **Quick Boot**

配置在BIOS引导期间是否允许跳过某些项的测试，减少BIOS引导时间。

➢ **Quiet Boot**

配置是否显示OEM LOGO内容。

➢ **Wait For ‘F1’ If Error**

配置在系统出错时是否提示按”F1”键。

➢ **1st～4th Boot Device**

配置系统启动时优先权高低的启动设备。

◆ **Security**

BIOS SETUP UTILITY		
Security Settings		Install or Change the password ←→ Select Screen ↑ ↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit
Supervisor Password	:Not Installed	
User Password	:Not Installed	
Change Supervisor Password		
Change User Password		
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.		

➢ **Change User/ Supervisor Password**

当按Change User/ Supervisor Password后，在对话框中输入新的密码后，此栏会显示用户密码已安装。

◆ **Exit**

South Bridge Configuration	
Exit Options Save Changes and Exit Discard Changes and Exit Discard Changes Load Optimal Defaults Load Failsafe Defaults	Exit system setup after saving the changes. ←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

➢ **Save Changes and Exit**

当您完成了所有的修改操作，想将原来的设置参数覆盖掉时，可执行此项功能，新的设置参数将保存在CMOS的存储器中。要执行此操作，先选定此选项并按下< Enter >键，再按< Enter >键即可退出。

➢ **Discard Changes and Exit**

当您所做的任何更改设置的动作不想存入CMOS的存储器中，可先选定此选项并按下< Enter >键，再按<Enter >键即可退出。

➢ **Discard Changes**

当您所做的任何更改设置的动作有误而需要忽略时，可先选定此选项并按下< Enter >键，然后可以再次进入相应选项进行重新设置。

➢ **Load Optimal Defaults**

此菜单用于在你的系统配置中装入缺省值。这些缺省设置是最优的，可以发挥所有硬件的高性能。

➢ Load Failsafe Defaults

该选项的功能是将各项设置初始化为实现最基本的和最安全的系统功能的值。要执行此项功能，先选中此选项按下< Enter >即可，接着系统会在屏幕上显示出要您确认的信息，按下< Enter >键确定执行该项功能。

x86 平台下BIOS所要管理的系统资源

这里的系统资源我们定义三种：I/O端口地址，IRQ中断号和DMA号。

◆ DMA

级别	功能
DMA0	DRAM 刷新
DMA1	未分配
DMA2	未分配
DMA3	未分配（有时用于硬盘）
DMA4	用于 DMAC 的级联
DMA5	未分配
DMA6	未分配
DMA7	未分配

◆ APIC

高级可编程中断控制器。在现代P4以上级别的主板中，大都支持APIC，可以提供多于16个中断源，如IRQ16—IRQ23，部分主板如支持PCI-X的主板可以有多达28个中断源。但要启用该功能必须相应的操作系统支持，目前只有windows 2000以上的操作系统支持。

◆ **IO端口地址**

系统I/O地址空间总共有64K，每一外围设备都会占用一段I/O地址空间。下表给出了本CPU卡部分设备的I/O 地址分配，由于PCI设备（如PCI网卡）的地址是由软件配置的，表中没有列出。

地 址	设备描述
000h - 00Fh	DMA 控制器#1
000h - CF7h	PCI bus
010h - 01Fh	底板资源
020h - 021h	可编程中断控制器#1
022h - 03Fh	底板资源
040h - 043h	系统计时器
044h - 05Fh	底板资源
060h	底板资源
061h	System speaker
062h -063h	底板资源
064h	底板资源
065h - 06Fh	底板资源
070h - 071h	实时时钟,NMI
072h -07Fh	底板资源
080h	底板资源
081h - 083h	DMA 控制器#2
084h - 086h	底板资源
087h	DMA 控制器#3
088h	底板资源
089h - 08Bh	DMA 控制器#4
08Ch - 08Eh	底板资源
08Fh	DMA 控制器#5
090h - 09Fh	底板资源
0A0h - 0A1h	可编程中断控制器#2
0A2h -0BFh	底板资源

0C0h - 0DFh	DMA 控制器#2
0E0h - 0EFh	底板资源
0F0h - 0FFh	数据数值处理器
1F0h - 1F7h	主要 IDE 通道
274h - 277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2F8h - 2FFh	串行端口 #2(COM2)
378h - 37Fh	打印机端口 (LPT1)
3B0h - 3BBh	Intel® Graphics Media Accelerator 3150
3C0h - 3DFh	Intel® Graphics Media Accelerator 3150
3F6h - 3F6h	主要 IDE 通道
3F8h - 3FFh	串行端口#1(COM1)
400h - 41Fh	SMBus 控制器
4D0h - 4D1h	底板资源
500h - 53Fh	底板资源
800h - 87Fh	底板资源
880h - 88Fh	底板资源
890h - 89Fh	底板资源
A79h	ISAPNP Read Data Port
0D00h-FFFFh	PCI bus

◆ **IRQ中断分配表**

系统共有15个中断源，有些已被系统设备独占。只有未被独占的中断才可分配给其它设备使用。ISA设备要求独占使用中断；只有即插即用ISA设备才可由BIOS或操作系统分配中断。而多个PCI设备可共享同一中断，并由BIOS或操作系统分配。下表给出了X86平台部分设备的中断分配情况，但没有给出PCI设备所占用的中断资源。

级别	功能
IRQ0	系统计时器
IRQ1	标准 101/102 键或 Microsoft 键盘
IRQ2	可编程的中断控制器
IRQ3	串口#2
IRQ4	串口#1
IRQ5	保留
IRQ6	保留给软驱控制器
IRQ7	并口
IRQ8	系统 CMOS/实时时钟
IRQ9	Microsoft ACPI-Compliant System
IRQ10	保留
IRQ11	保留
IRQ12	PS/2 鼠标
IRQ13	数学协处理器
IRQ14	主 IDE
IRQ15	保留

第四章　驱动程序安装说明

本产品的驱动程序可依据配套光盘内容安装，在此不做介绍。

附录

Watchdog编程指引

本主板提供一个可按分或按秒计时的，最长达255级的可编程看门狗定时器(以下简称WDT)。通过编程，WDT超时事件可用来将系统复位或者产生一个可屏蔽中断。

本主板可使用的中断号为：3，4，5，7，9，10，11。使用前请把BIOS Setup界面PCIPnP组中对应的IRQ号选项值改成Reserved。以下用C语言形式提供了WDT的编程范例，对WDT的编程需遵循以下步骤：

- 进入WDT编程模式
- 设置WDT工作方式，启动或关闭WDT。

(1) 进入WDT编程模式。

```
/*
    描述：函数PreInitWDT用于初始化WDT相关的寄存器，请在设置并使用WDT之前调用一次此函数。
    输入：无
    输出：无
    注意：此函数会修改变量pm_base的值，并且pm_base会被设置WDT的函数SetWDT引用。
*/

        #define   INDEX_PORT    0x4E
        #define   DATA_PORT     0x4F
        unsigned  int tmp_reg;
        unsigned int pm_base;

VOID PreInitWDT()
{
        outportb(INDEX_PORT, 0x55);
        outportb(INDEX_PORT, 0x07);
```

```
        outportb(DATA_PORT, 0x0A);
        outportb(INDEX_PORT, 0x30);
        outportb(DATA_PORT, 0x01);
        outportb(INDEX_PORT, 0x60);
        tmp_reg = inportb(DATA_PORT);
        pm_base = tmp_reg;
        outportb(INDEX_PORT, 0x61);
        tmp_reg = inportb(DATA_PORT);
        pm_base = pmbase<<8+tmp_reg; /*此处得到变量pm_base供后续程序
        使用*/
}
```

(2) 配置WDT工作方式，启动或关闭WDT。

```
/*
    描述：函数SetWDT用于配置WDT需要的参数，启动或关闭WDT。
    输入：Wmode:    0  -  配置WDT成复位工作方式
                    IRQ_NO  -  配置WDT成中断工作方式,此处请用需要使
                    用的中断号替换掉常量IRQ_NO,文档前端已经列出可使
                    用中断号的范围。
          Wtime:    0  -  配置WDT按分计时
                    1  -  配置WDT按秒计时
          Timeout:  0  -  停止WDT
                    TIME_OUT_VALUE  -  启动WDT, 以超时时间单位数
量。
                    (0x01～0xFF)替换掉常量TIME_OUT_VALUE
*/
SetWDT(unsigned  int Wmode,  unsigned  int Wtime,  unsigned  int
Timeout)
{
    unsigned int irq;
```

```
    If (Wmode == 0)
        outportb(pm_base+0x47, 0x0C);
    else
        {
        unsigned int irq;
        irq = Wmode;
        irq = irq<<4;
        outportb(pm_base+0x47, 0x80);
        outportb(pm_base+0x67, irq);
        }

        If (Wtime == 0)
            outportb(pm_base+0x65, 0x00);
        else
            outportb(pm_base+0x65, 0x80);

        outportb(pm_base+0x66, Timeout);

}
```

常见故障分析与解决

序号	故障现象	故障分析解决
1	BIOS 设置不能保存	分析：可能是 CMOS 电池的问题。
		解决方法：用万用表测量 CMOS 电池，电压不足就更换新电池，重新设置保存。
2	时可开机时不可开机	分析：可能是电源接触不良，从主板电源插座上拔下电源，发现主板电源插针某根插针经多次用力插压，已经倒向一边。
		解决方法：关机拔下电源插头，用镊子将弯曲的电源插针弄直插上电源开关，重新启动，多次试验，没有出现此类故障。
3	当接上 U 盘时，系统提示一个高速设备接到一个低速接口上。	分析：U 盘是高速 USB2.0，接到电脑上有提示一个高速设备接到一个低速接口上，说明主板的接口被认为是一个 USB1.1 的接口。
		解决方法：将主板上 USB 高速传输模式打开即可。不同的主板有不同的设置。一般是将 USB 设备选项中的 FULLSPEED 改为 HISPEED 即可。
4	更换新内存后屏幕无显示，呈现黑屏状态，无法正常进入系统，换上原来的内存仍然无法启动。	分析：可能是由于在插拔内存的过程中操作不当引起主板上部件工作不正常，需要重点检查主板上与内存相关的电路。
		解决方法：首先检查内存、显卡等硬件，结果显示这些硬件都没有问题，都可以正常使用。仔细检查主板上内存插槽周围的电路，最终发现第一个内存插槽里的两根与内存金手指接触的针脚搭在一起，对照第二个内存插槽没有该现象，由此判断是第一个内存插槽短路了。用镊子小心地将两根针脚拨回原处，插上内存，重新启动，系统顺利启动。

5	更换光驱后系统无法启动	分析：可能是由于在安装光驱时不小心碰撞了硬盘的数据线，从而使硬盘数据线接口接触不良导致的，或者是硬盘和光驱上的主从跳线设置不正确。
		解决方法：首先对硬盘数据线和硬盘及主板上的 IDE 接口进行检查，发现没有问题；然后检查主从跳线的设置，发现硬盘和光驱连接在不同的数据线上，而且硬盘和光驱的跳线都设置为主盘，从而导致硬盘无法启动；将光驱的跳线设置为从盘，重新安装好。
6	进入系统后无法检测到 PCI 卡	分析：确认 PCI 卡功能是否正常；将 PCI 卡重插或插入其他 PCI 插槽，看能否正常；了解使用的电源类型（是 AT 还是 ATX）；了解客户的 PCI 卡的电压需求。
		解决方法：如 PCI 卡功能问题，更换 PCI 卡解决；重插或插入其他 PCI 插槽即可正常，则为 PCI 卡与插槽接触问题。如果使用的是 AT 电源，但 PCI 卡需要 3.3V 电压，因为 AT 电源不提供 3.3V 电压，电源需更换为 ATX 电源方可使用 PCI 卡。（建议：在选购电源时，先了解所使用的 PCI 卡是否需要 3.3V 电压。）
7	找不到外接设备	分析：没有连接；没有装驱动；设备已坏。
		解决方法：查看设备与主板的连接线是否正常，如正常则更换正常连接线确定连接无问题；重新安装设备驱动，看是否可以识别；检测设备是否正常；如设备正常考虑与主板是否兼容。

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Hotline: 4008809666

Safety Instructions

1. Please read this manual carefully before using the product;
2. Leave the board or card in the antistatic bag until you are ready to use it;
3. Touch a grounded metal object (e.g. for 10 seconds) before removing the board or card from the anti-static bag;
4. Before installing or removing a board, wear the ESD gloves or ESD wrist strap; handle the board by its edges only;
5. Before inserting, removing or re-configuring motherboards or expansion cards, first disconnect the computer and peripherals from their power sources to prevent electric shock to human bodies or damage to the product;
6. Remember to disconnect the AC power cord from the socket before removing the board or moving the PC;
7. For PC products, remember to disconnect the computer and peripherals from the power sources before inserting or removing a board;
8. Before connecting or disconnecting any terminal, peripheral or any device, be sure the system is powered off and all the power sources are disconnected;
9. After turning off the computer, wait at least 30 seconds before turning it back on

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Chapter 1 Product Introduction

Overview

The board adopts Intel® Atom™ N455 1.66GHz high performance processor, integrating North Bridge + ICH8M Chipset. The Atom™ N455 processor adopts 45nm craft and single-core dual-thread processing with 512KB SmartCache and 6.5W rated power consumption; the performance of the processor can be improved via Intel® Turbo Boost technology. The N455 processor integrates DDR3 667MHz memory controller, video card controller and PCI Express controller.

The board supports CPU, 2G 667MHz DDR3, CF card storage (unsupported on CPC-3713CLD3N), SATA storage, multi-LAN ports, serial ports and USB ports on board. The hardware and the architecture of the product comply with the specifications for the railway industry; it can be also applied in the commercial computer and railway fanless box PCs in aviation and military fields.

Mechanical Dimensions, Weight and Environment

- Dimensions: 169.3mm (L) x 100mm (W) x 15.5mm (H);
- Net Weight: 0.58Kg;
- Operating Environment:

  Temperature: -20°C ~ 70°C;

  Humidity: 10% ~ 95% (non-condensing);
- Storage Environment:

  Temperature: -40°C ~ 85°C;

  Humidity: 10% ~ 95% (non-condensing);

Typical Consumption

The typical consumption is based on the following idle status values.

CPU: Intel® Atom™ N455 1.66GHz;

Memory: DDR3 667 K4B2G0846D-HCH9 2GB;

Operating System: Windows XP Chinese Version/SP3

- +5V@1.18A; +5%/-3%;
- +3.3V@2.6A; +5%/-3%;
- +12V@0.04A; +5%/-3%.

Microprocessor

Supports Intel® Atom™ N455 CPU on board, DMI: 2.5GT/S with 45nm craft and single-core dual-thread processing. The main frequency is 1.66GHz and the rated power consumption is 6.5W.

Chipset

Intel® ICH8M Chipset

System Memory

Provides DDR3 SDRAM 667MHz memory IC on-board, supporting single channel function. The maximum memory capacity supported by a single memory channel is up to 2GB.

Display Function

- Adopts Intel® GMA display chip integrated by Atom™ N455 processor;
- Supports independent dual display CRT+LVDS;
- Supports independent VGA output; the maximum resolution and refresh rate supported by VGA is up to 1400 x 1050@60Hz, the VGA signals are brought out to J2;

- Supports independent LVDS output; the maximum resolution supported by LVDS is up to 1280 x 800;
- The display combinations for CRT+LVDS include: VGA+LVDS on front panel or VGA+LVDS on rear IO; VGA output can be set via BIOS setting; the default value is output on the front panel while CPC-3713CLD3N-T is set to VGA output on rear IO as default value. Please refer to BIOS setup for detailed information.

Network Function

Provides one 10/100/1000Mbps Ethernet channel to the front panel; two independent 10/100/1000Mbps Ethernet signals are brought out to rear IO via J2 with transmission indicating signals.

Power Feature

Adopts CPCI power, supporting S0.

Expansion Bus

Provides seven 32-bit CPCI slots, complying with CompactPCI standard.

Watchdog Function

- 255 levels, programmable by minute or second;
- Supports watchdog timeout interrupt or reset system.

Operating System

- Supported OSs: Windows XP, Vxworks and Linux;

On-board I/O

- Three serial ports: one is brought out to the front panel while the other two to

the rear IO via J2, which support RS-232 mode.

- Three SATA connectors: one is on-board SATA connector while the other two SATA signals are brought to the rear IO via J2.
- Four USB2.0 ports: two channels are brought to the front panel while the other two USB2.0 signals to the rear IO via J2.
- One PS/2 connector, brought out via rear IO;
- One CF card connector (it is not supported on CPC-3713CLD3N).

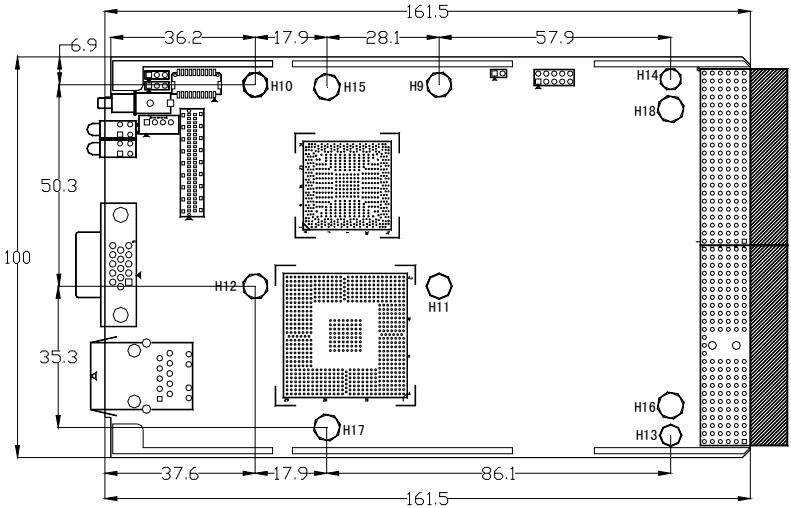
Tips: how to identify the alarms

1. Long “beep” indicates system memory error;

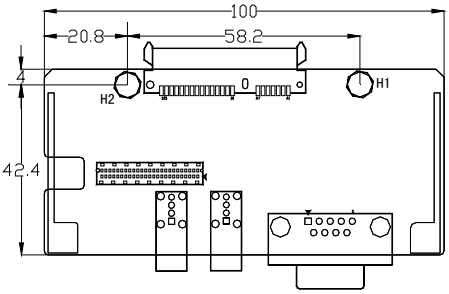
2. Short “beep” indicates to power on the computer.

Chapter 2 Installation

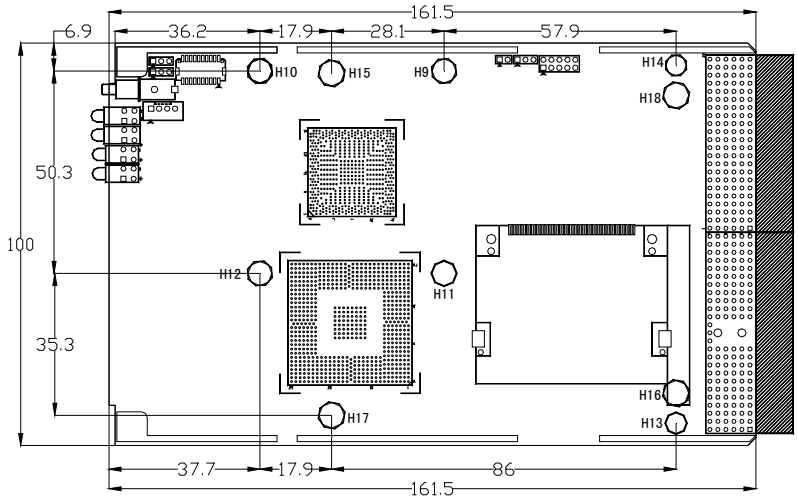
Product Outline



CPC-3713CLD3N



CPC-3713CLD3N-2



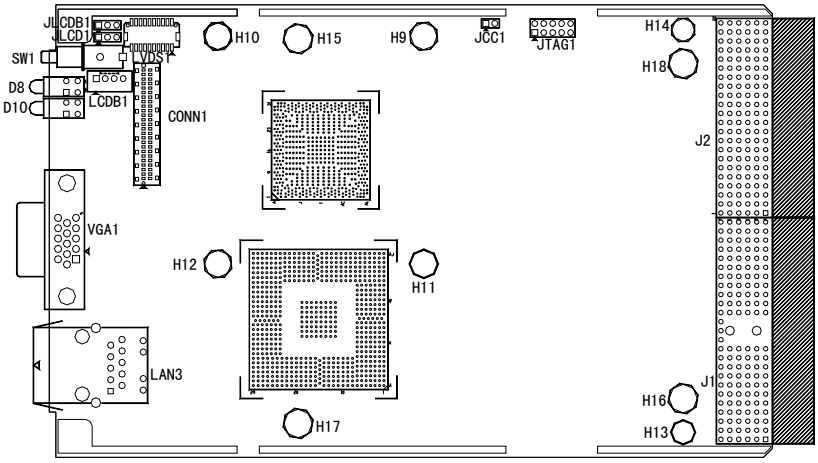
CPC-3713CLD3N-T

Unit: mm

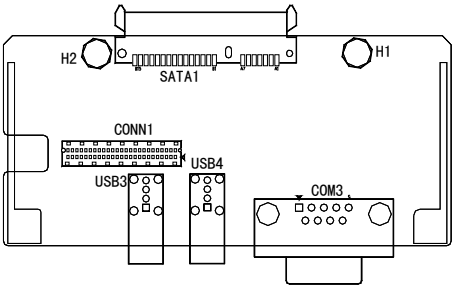
Warning!

Please adopt appropriate screws and proper installation methods (including board allocation, CPU and heat sink installation, etc); otherwise, the board may be damaged. It is recommended to use Φ6 x 8LXM2.5 crosshead nuts at H9-H12 and M3 x 5/GB-T818-1985 pan head screws at H15-H18.

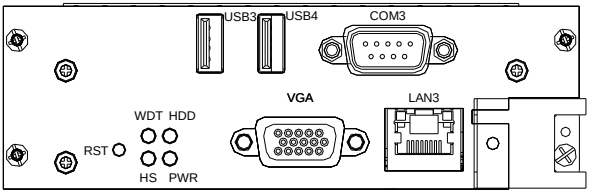
Locations of Connectors

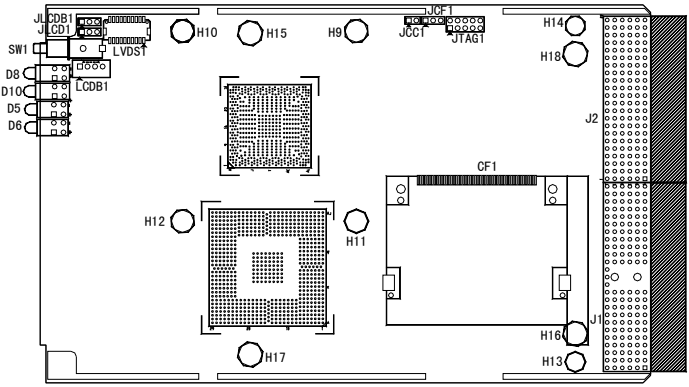


CPC-3713CLD3N

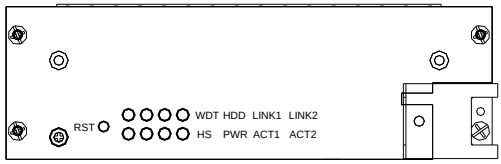


CPC-3713CLD3N-2

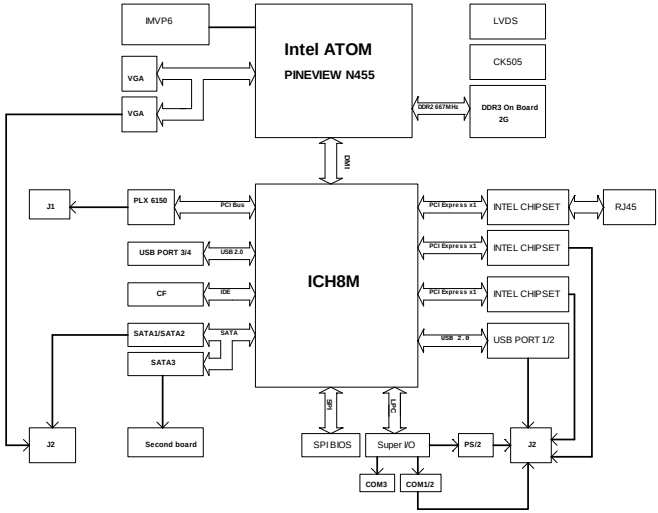




CPC-3713CLD3N-T



Structure



Tip: How to identify the first pin of the jumpers and connectors

1. Observe the letter beside the socket: the first pin is usually marked with "1" or bold lines or triangular symbols;
2. Observe the solder pad on the back; the square pad is the first pin.

Jumper Setting

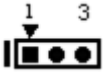
1. JCC1: Clear/Keep CMOS Setting (Pitch: 2.0mm)

CMOS is powered by the button battery on board. Clearing CMOS will restore original settings (factory default). The steps are listed as follows: (1) Turn off the computer and unplug the power cable; (2) Instantly short circuit JCC1; (3) Turn on the computer; (4) Follow the prompt on screen to enter BIOS setup when booting the computer, load optimized defaults; (5) Save and exit. Please set as follows:

JCC1

Setup	Function
1-2 Open	Normal ((Default)
1-2 Short	Clear the contents of CMOS and all BIOS settings will restore to factory default values.

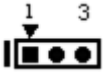
2. JCF1: Choose CF Card Operating Voltage (Pitch: 2.0mm, No JCF1 on CPC-3713CLD3N)



JCF1

Setup	Function
1-2 Short	+3.3V
2-3 Short	+5V(Default)

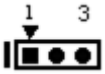
3. JLCD1: Choose LCD Operating Voltage (Pitch: 2.0mm)



JLCD1

Setup	Function
1-2 Short	+3.3V(Default)
2-3 Short	+5V

4. JLCDB1: Choose LCD Backlight Operating Voltage (Pitch: 2.0mm)

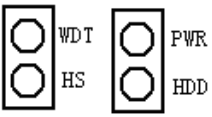


JLCDB1

Setup	Function
1-2 Short	+12V(Default)
2-3 Short	+5V

5. The board provides one reset button (SW1).

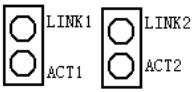
Indicator



D8/D10

LED	Status	Description
HDD	OFF	HDD or CF card is idle
	ON	HDD or CF card is operating
PWR	OFF	Power failure
	ON	Power normal
HS	OFF	Normal operation status
	ON	Under hot swap status
WDT	OFF	Watchdog is not operating
	ON	Watchdog is operating

LAN indicators on rear IO, CPC-RP3713-T (No LAN indicators on CPC-3713CLD3N)

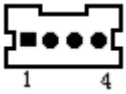


D5/D6

LED	Description
LAN1 LINK	LAN indicator for LAN1 on rear IO, CPC-RP3713-T
LAN1 ACT	LAN indicator for LAN1 on rear IO, CPC-RP3713-T
LAN2 LINK	LAN indicator for LAN2 on rear IO, CPC-RP3713-T
LAN2 ACT	LAN indicator for LAN2 on rear IO, CPC-RP3713-T

LCD Backlight Control Connector

The board provides one 1 x 4Pin LCD backlight control connector (Pitch: 2.54mm); the pin definitions are as follows:



LCDB1

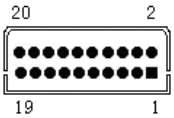
Pin	Signal Name
1	VCC_LCDBKLT
2	NC
3	LCD_BKLTEN
4	GND

VCC_LCDBKLT---Backlight Power (The current is limited below 1A);

LCD_BKLTEN ---Backlight Enable, Active High (The signal is output as CMOS via North Bridge directly; the voltage amplitude is between 0V-3.3V).

LVDS Connector

The board provides one single channel 18bit LVDS connector (Pitch: 1.0 mm).



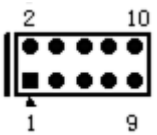
LVDS1

Pin	Signal Name	Pin	Signal Name
1	LVDS_D0+	2	LVDS_D0-
3	GND	4	GND
5	LVDS_D1+	6	LVDS_D1-
7	GND	8	GND
9	LVDS_D2+	10	LVDS_D2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	NC	18	NC
19	VDD	20	VDD

Note: the LVDS socket adopted by the board is DF20G-20DP-1V while the corresponding terminal is F20A-20DF-1C.

JTAG Connector

Burn record the data required by CPLD via JTAG1 (Pitch: 2.0mm) on board.

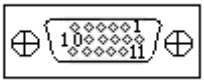


JTAG1

Pin	Signal Name	Pin	Signal Name
1	TCK	2	GND
3	TDO	4	VCC
5	TMS	6	NC
7	NC	8	NC
9	TDI	10	GND

Display Connector

The board provides one 15-pin D-sub VGA display connector. (No VGA on CPC-3713CLD3N-T)



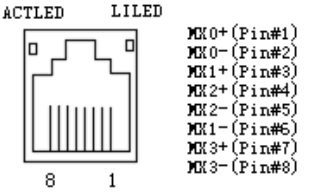
VGA(VGA1)

Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

LAN Port

The board provides one 10/100/1000Mbps LAN port (No LAN port on CPC-3713CLD3N-T). ACTLED and LILED are the LED indicators on both sides of the Ethernet port, which respectively indicates the activity status and the transmission speed of LAN. Please refer to the status description for each LED:

MX0, MX0-: positive/negative data channel 0	MX1, MX1-: positive/negative data channel 1
MX2, MX2-: positive/negative data channel 2	MX3, MX3-: positive/negative data channel 3
ACTLED: LAN activity status indicator	LILED: LAN linked status indicator



LAN3

ACTLED (Green)	LAN Activity Status Indicator		LILED (Dual-Color: O/G)	LAN Speed Indicator
			Green	1000Mbps
Blink	Data Transmitting		Orange	100Mbps
Off	No Data to Transmit		Off	10Mbps

Note: Wake-on-LAN function is not supported.

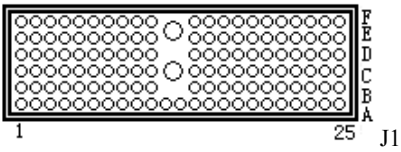
CompactFlash Connector

CF card in system is under Master status. The pin definitions for CompactFlash slots are as follows (Marked as CF1 in figure, no CF slot on CPC-3713CLD3N).

Pin	Signal Name	Pin	Signal Name
1	GND	26	CD1#
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS0#	32	CS1#
8	GND	33	VS1#
9	ATASEL#	34	IOR#
10	GND	35	IOW#
11	GND	36	WE#
12	GND	37	IRQ
13	VCC	38	VCC
14	GND	39	CSEL#
15	GND	40	VS2#
16	GND	41	RESET#
17	GND	42	IORDY
18	A2	43	DREQ
19	A1	44	DACK#
20	A0	45	DASP#
21	D0	46	ATA66_DET
22	D1	47	D8
23	D2	48	D9
24	WP/IOCS16#	49	D10
25	CD2#	50	GND

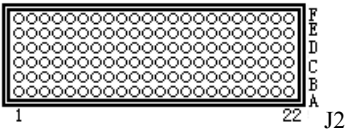
CompactPCI Connector

Pin Definitions for J1



Pin	Signal Name					
	A	B	C	D	E	F
1	+5V	-12V	TRST#	+12V	+5V	GND
2	TCK	+5V	TMS#	TDO	TDI	GND
3	INTA#	IRQB#	INTC#	+5V	INTD#	GND
4	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND
5	NC	NC	PCI_RST#	GND	GNT0#	GND
6	REQ0#	PCI_PRESENT#	+3.3V	CLK0	AD31	GND
7	AD30	AD29	AD28	GND	AD27	GND
8	AD26	GND	V(I/O)	AD25	AD24	GND
9	C/BE3#	GND	AD23	GND	AD22	GND
10	AD21	GND	+3.3V	AD20	AD19	GND
11	AD18	AD17	AD16	GND	C/BE2#	GND
12	KEY AREA					
13						
14						
15	+3.3V	FRAME#	IRDY#	BD_SE	TRDY#	GND
16	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
17	+3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
18	SERR#	GND	+3.3V	PAR	C/BE1#	GND
19	+3.3V	AD15	AD14	GND	AD13	GND
20	AD12	GND	V(I/O)	AD11	AD10	GND
21	+3.3V	AD9	AD8	M66EN	C/BE0#	GND
22	AD7	GND	+3.3V	AD6	AD5	GND
23	+3.3V	AD4	AD3	+5V	AD2	GND
24	AD1	+5V	V(I/O)	AD0	ACK64#	GND
25	+5V	REQ64#	ENUM#	+3.3V	+5V	GND

Pin Definitions for J2

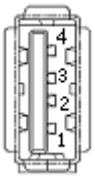


Pin	Signal Name					
	A	B	C	D	E	F
22	GA4	GA3	GA2	GA1	GA0	GND
21	CLK6	GND	USB3P/bi	USB4P/bi	+5V_USB	GND
20	CLK5	GND	USB3N/bi	USB4N/bi	+5V_USB	GND
19	GND	GND	SMBB_SDA	SMBB_SCL	NC	GND
18	2RXD/in	2DCD#/in	2DTR#	2CTS#/in	3CTS#/in	GND
17	2TXD/out	2RTS#/in	PRST#	REQ6#	GNT6#	GND
16	2DSR#/in	+5V	DEG#	GND	3RI#/in	GND
15	LAN2_LINK_100#	+5V_KM	FAL#	REQ5#	GNT5#	GND
14	LAN2_TX0+	LAN2_TX0-	3RTS#/out	LAN2_TX2+	LAN2_TX2-	GND
13	LAN2_TX1+	LAN2_TX1-	3RI#/in	LAN2_TX2+	LAN2_TX3-	GND
12	LAN3_TX0+	LAN3_TX0-	3TXD	LAN3_TX3+	LAN3_TX2-	GND
11	LAN3_TX1+	LAN3_TX1-	3DCD#/in	LAN3_TX3+	LAN3_TX3-	GND
10	GND	GND	VGA_RED/out	2DTR#/out	NC	GND
9	SATA2TXP/OUT	3TXD/out	VGA_HSYNC/out	GND	SATA3TXP/OUT	GND
8	SATA2TXN/OUT	3DSR#	VGA_BLUE/out	MS_DATA	SATA3TXN/OUT	GND
7	GND	LAN2_LINK_1000#	VGA_DDC_DAT	MS_CLK	NC	GND
6	SATA2RXP/IN	LAN2_ACT#	VGA_GREEN/out	KB_DATA	SATA3RXP/IN	GND
5	SATA2RXN/IN	GND	VGA_VSYNC/out	KB_CLK	SATA3RXN/IN	GND
4	VI/O	LAN3_LINK_100#	VGA_DDC_CLK/out	LAN3_LINK_1000# N3_LINK_1000	LAN3_ACT#	GND
3	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

Installation Instructions for CPC-3713CLD3N-2

USB Port

The board provides two standard USB ports.

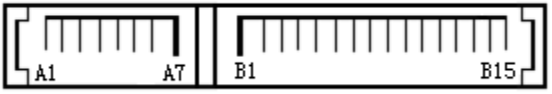


USB3/USB4

Pin	Signal Name
1	+5V
2	USB_Data-
3	USB_Data+
4	GND

SATA Connector

The board provides one 7+15Pin SATA connector.



SATA1

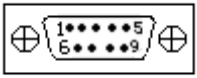
Pin	Signal Name	Pin	Signal Name
A1	GND	B5	GND
A2	TX+	B6	GND
A3	TX-	B7	+5VL
A4	GND	B8	+5V
A5	RX-	B9	+5V
A6	RX+	B10	GND
A7	GND	B11	GND
B1	+3.3V	B12	GND
B2	+3.3V	B13	+12VL
B3	+3.3VL	B14	+12V
B4	GND	B15	+12V

Board Connector

CONN1 is on the rear of the board; no board connector is supported on CPC-3713CLD3N-T.

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	USB_OC01#	A2	GND	A3	USB_DN0
A4	GND	A5	USB_DN1	A6	GND
A7	SATA_RXP2	A8	GND	A9	SATA_TXP2
A10	GND	A11	COM1_RXD	A12	COM1_DTR#
A13	COM1_RTS#	A14	COM1_DSR#	A15	NC
A16	GND	A17	NC	A18	NC
A19	+3.3V	A20	+3.3V	A21	NC
A22	NC	A23	NC	A24	+5V
A25	+5V	B1	NC	B2	GND
B3	USB_DP0	B4	GND	B5	USB_DP1
B6	GND	B7	SATA_RXN2	B8	GND
B9	SATA_TXN2	B10	GND	B11	COM1_CTS#
B12	COM1_RI#	B13	COM1_DCD#	B14	COM1_TXD
B15	NC	B16	GND	B17	NC
B18	NC	B19	+12V	B20	+12V
B21	NC	B22	NC	B23	+5V
B24	+5V	B25	+5V	G1	GND
G2	GND	G3	GND	G4	GND
G5	GND	G6	GND	G7	GND
G8	GND	G9	GND	G10	GND
G11	GND	G12	GND	G13	GND
G14	GND	G15	GND	G16	GND
G17	GND	G18	GND		

Standard DB9 Serial Port



COM3

Pin	Signal Name
1	DCD#
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

Note: Wake-up function is not supported on serial port.

Chapter 3 BIOS Setup

BIOS Overview

BIOS (Basic Input and Output System) is solidified in the flash memory on the CPU board. Its main functions include: initialize system hardware, set the operating status of the system components, adjust the operating parameters of the system components, diagnose the functions of the system components and report failures, provide hardware operating and controlling interface for the upper level software system, guide operating system and so on. BIOS provides users with a human-computer interface in menu style to facilitate the configuration of system parameters for users, control power management mode and adjust the resource distribution of system device, etc.

Correct BIOS settings make system more stable and reliable and also improve the overall performance of the system. Inappropriate or wrong BIOS settings reduce the performance of system, make system unstable and even unable to work normally.

BIOS Parameter Setup

Prompt message for BIOS setting may appear once the system is powered on and the computer booted. At that time (invalid at other time), press the key specified in the prompt message (usually <Del>) to enter into BIOS setting.

If the BIOS setting in CMOS is destroyed, system will ask you to enter BIOS setting or select certain default value.

All the setup values modified by BIOS are saved in the CMOS storage of the system. The CMOS storage is powered by battery; unless clearing CMOS is executed, the settings would not be lost even when the power supply is cut off.

Note! BIOS setting will influence the computer performance directly. Wrong settings may damage computer or even prevent boot up. After clearing CMOS, use the internal default value of BIOS to restore the normal operation of system.

Our company is constantly researching and updating BIOS, so the setup interface may be a bit different. The figure below is for reference only; it may be different from your BIOS setting procedure in use.

Basic Function Setting for BIOS

After starting SETUP program, the main interface of CMOS Setup Utility will appear:

BIOS SETUP UTILITY	
System Overview	←→ Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
Processor Type : Intel(R) Atom(TM) CPU N455 @ 1.66GHz Speed :1666MHz System Memory Size :2039MB System Time [00:47:55] System Date [Mon 01/11/2010]	
V02.61 (c)Copyright 1985-2006,American Megatrends, Inc.	

◆ **Main**

➢ **System Time**

Choose this option and set the current time by < + > / < - >, which is displayed in the format of hour/minute/second. Reasonable range for each option is: Hour (00-23), Minute (00-59), Second (00-59).

➢ **System Date**

Choose this option and set the current date by < + > / < - >, which is displayed in the format of month/date/year. Reasonable range for each option is: Month (Jan.-Dec.), Date (01-31), Year (Maximum to 2099), Week (Mon. ~ Sun.).

◆ **Advanced**

BIOS SETUP UTILITY	
Advanced Settings	Configure CPU
WARNING: Setting wrong values in below sections may cause system to malfunction ►CPU Configuration ►IDE Configuration ►Super I/O Configuration ►Hardware Health Configuration ►USB Configuration ►Clock Generator Configuration	←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

➢ **CPU Configuration**

BIOS SETUP UTILITY	
Configure advanced CPU settings Brand String: Intel(R) Atom(TM) CPU N455 @ 1.66GHz Frequency; :1.66GHz FSB Speed; :667MHz Cache L1; :24 KB Cache L2; :512 KB Ratio Actual Value :10 Hyper Threading Technology [Enabled]	←→ Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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● **Hyper Threading Technology**

Control switch for Intel Hyper Threading Technology.

➢ **IDE Configuration**

BIOS SETUP UTILITY		
IDE Configuration		
ATA/IDE Configuration	[Enhanced]	
Configure SATA as	[IDE]	
▶Primary IDE Master	:[Not Detected]	←→ Select Screen
▶Primary IDE Slave	:[Not Detected]	↑↓ Select Item
▶Secondary IDE Master	:[Not Detected]	+ - Change Field
▶Secondary IDE Slave	:[Not Detected]	Tab Select Field
▶Third IDE Master	:[Not Detected]	F1 General Help
▶Third IDE Slave	:[Not Detected]	F10 Save and Exit
		ESC Exit
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- **ATA/IDE Configuration**

  This option is used to configure the operating mode for ATA; there are two options: Enhanced mode and Compatible mode.

- **Configure SATA as**

  SATA controller type selection; there are three options for this item: IDE, RAID and AHCI. Only when ATA/IDE Configuration is under Enhanced mode, are RAID and AHCI supported.

  Both RAID and AHCI functions require supports from hardware chip and OS.

  Note: RAID is supported on ICH8M-E only.

- **Legacy IDE Channels**

  Configure the IDE channel type under compatible mode; there are four options: SATA Only, SATA Pri, PATA Sec and PATA Only.

- **Primary ~ Third IDE Master/Slave**

  *** Type**

  Not Installed: no IDE device can be detected by system;

  AUTO: automatic detection of IDE parameters when powering on;

  CD/DVD: used for ATAPI CDROM;

ARMD: used for various analog IDE devices.

*** LBA/Large Mode**

Used to set whether to support LBA mode or not.

*** Block(Multi-sector Transfer)**

Used to set whether to support multi-sector simultaneous transfer or not.

*** PIO Mode**

Used for PIO mode setting.

*** DMA Mode**

Used for DMA mode setting.

*** S.M.A.R.T**

Used to set whether to enable S.M.A.R.T function and it is only effective for the hard disk supporting this function.

*** 32Bit Data Transfer**

This option is used to enable 32-bit hard disk accessing mode, which could optimize hard disk read and write speed.

- **Super I/O Configuration**

BIOS SETUP UTILITY		
Configure Super I/O Chipset		Allows BIOS to Enable or Disable Floppy Controller.
Floppy A	[Disabled]	
OnBoard Floppy Controller	[Enabled]	←→ Select Screen
Serial Port1 Address	[3F8]	↑↓ Select Item
Serial Port1 IRQ	[IRQ4]	+ - Change Field
Serial Port2 Address	[2F8]	Tab Select Field
Serial Port2 IRQ	[IRQ4]	F1 General Help
Serial Port3 Address	[3E8]	F10 Save and Exit
Serial Port3 IRQ	[IRQ3]	ESC Exit
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- **Floppy A**

  Configure the floppy driver type.

- **OnBoard Floppy Controller**

  Used to enable the floppy controller.

- **Serial Port 1 ~ 3 Address**

  Set the addresses of COM1 ~ 3 on motherboard.

- **Serial Port 1 ~ 3 IRQA**

  Set the IRQs of COM1 ~ 3 on motherboard.

➢ **Hardware Health Configuration**

BIOS SETUP UTILITY		
Hardware Health Configuration		Enables Hardware Health Monitoring Device
System Temperature	: 30°C/86°F	
CPU Temperature	: 37°C/98°F	
Vcore	: 1.136 V	←→ Select Screen
V3.3	: 3.296 V	↑↓ Select Item
V5.0	: 5.094 V	+ - Change Field
V12.0	: 12.196 V	Tab Select Field
VBAT	: 3.152 V	F1 General Help
		F10 Save and Exit
		ESC Exit
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- **System Temperature**

  Current system temperature, it is monitored by thermal resistor on motherboard.

- **CPU Temperature**

  Current CPU temperature, it is monitored by the temperature sensor on board.

- **CPUFAN1**

  Current CPU fan speed.

- **Vcore**

CPU core voltage;

- **V3.3/ V5.0/ V12.0**

  Turn on/off power to output voltage;

- **VBAT**

  Monitor the battery voltage.

➢ **USB Configuration**

BIOS SETUP UTILITY	
USB Configuration	Enables USB host controllers.
USB Devices Enabled :	←→ Select Screen
1 Keyboard, 1 Drive	↑↓ Select Item + - Change Field
USB Function [4 USB Ports] USB 2.0 Controller [Enabled] Legacy USB Support [Auto] ▶USB Mass Storage Device Configuration	F1 General Help F10 Save and Exit ESC Exit
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- **USB Function**

  This option is used to set the number of the USB controller, that is to confirm how many USB controllers are supported. One controller usually has two USB connectors.

- **USB 2.0 Controller**

  This option is used to set whether to support USB 2.0 controller.

- **Legacy USB Support**

  This option is used to support legacy USB devices (keyboard, mouse and storage device, etc.); when this option is set to Enabled, the USB device could be used even if under OS that doesn't support USB, such as DOS.

- **USB Mass Storage Device Configuration**

  This option is used configure the USB mass storage device, including reset delay setting and enumeration type.

➢ **Clock Generator Configuration**

BIOS SETUP UTILITY	
Configure Clock Generator	←→ Select Screen ↑↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
Spread Spectrum [Enabled]	
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- **Spread Spectrum**

  This option is used to control the spread spectrum function of the clock signal.

◆ **Chipset**

BIOS SETUP UTILITY	
Advanced Chipset Settings	
WARNING: Setting wrong values in below sections may cause system to malfunction. North Bridge Chipset Configuration DRAM Frequency [Auto] Configure DRAM Timing by SPD [Enabled] Boot Display Device [CRT+LVDS] Flat Panel Type [800X600/S/18/G104S] UserDefine Panel Type [Disabled] South Bridge Chipset Configuration VGA Port Switch [Front Panel]	←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
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➢ **DRAM Frequency**

Configure the frequency for DRAM; it is recommended to use automatic modification instead of manual modification; otherwise, it will not be able to power on because it is not supported by DRAM.

➢ **Configure DRAM Timing by SPD**

BIOS configures the time sequence of the SDRAM according to the contents of the SPD chip. Most of the memory module has one small chip to save the time sequence and capacity of the memory, i.e. the SPD chip.

- **Boot Display Device**

  This option is used to specify the boot-up priority of the graphics device type.

- **Flat Panel Type**

  This option is used to choose the LVDS Panel type.

- **UserDefine Panel Type**

  This option is used to set the user-defined LVDS Panel type.

- **VGA Port Switch**

  This option is used to control the display function of the VGA connector on front panel or rear panel.

◆ **PCIPnP**

BIOS SETUP UTILITY		
Advanced PCI/PnP Settings		
WARNING: Setting wrong values in below sections may cause system to malfunction.		
IRQ3	[Available]	←→ Select Screen
IRQ4	[Available]	↑↓ Select Item
IRQ5	[Reserved]	+ - Change Field
IRQ7	[Available]	F1 General Help
IRQ9	[Available]	F10 Save and Exit
IRQ10	[Available]	ESC Exit
IRQ11	[Available]	
IRQ14	[Available]	
IRQ15	[Available]	
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- **IRQ3 ~ 15**

  This option is used to specify whether the IRQ number is PNP mode or reserved for ISA.

◆ **Boot**

BIOS SETUP UTILITY		
Boot Settings		←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
Quick Boot	[Enabled]	
Quiet Boot	[Disabled]	
Waite For 'F1' If Error	[Disabled]	
Boot Device Priority		
1st Boot Device	[USB: aigo USB DISK]	
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➢ **Quick Boot**

During BIOS booting period, configure whether to permit skipping certain test to reduce BIOS booting time.

➢ **Quiet Boot**

Configure whether to display the content of OEM LOGO.

➢ **Wait For 'F1' If Error**

Configure whether to prompt pressing "F1" during system error.

➢ **1st ~ 4th Boot Device**

Configure the priority of the boot sequence for devices when the system boots.

◆ **Security**

BIOS SETUP UTILITY		
Security Settings		Install or Change the password ←→ Select Screen ↑↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit
Supervisor Password	:Not Installed	
User Password	:Not Installed	
Change Supervisor Password		
Change User Password		
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➢ **Change User/ Supervisor Password**

After pressing Change User/ Supervisor Password and input new password in the dialog box, this column will indicate that user's password has been installed.

◆ **Exit**

South Bridge Configuration	
Exit Options Save Changes and Exit Discard Changes and Exit Discard Changes Load Optimal Defaults Load Failsafe Defaults	Exit system setup after saving the changes. ←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
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➢ **Save Changes and Exit**

When you have finished all the changes and want to cover the original parameters, you may implement this operation and save the new parameters into CMOS storage. To implement this operation, you may choose this option and press < Enter >; press < Enter > again to exit.

➢ **Discard Changes and Exit**

If you do not want to save the change into CMOS storage, please choose this option and press < Enter >; press < Enter > again to exit.

➢ **Discard Changes**

If error occurs in your change and the changes need to be neglected, please choose this option and press < Enter > in order to enter corresponding options again and reset it.

➢ **Load Optimal Defaults**

This menu is used to load default value in system configuration. These default values are optimized and could give play to the high capability of all hardware.

➢ **Load Failsafe Defaults**

The function of this option is to initialize the setup of each option to realize the most fundamental and secure system functional value. To implement this function, choose this option and press < Enter >; messages to be confirmed will be shown on the screen, press < Enter > to implement this function.

System Resource Managed by BIOS under X86 Platform

We define three kinds of system resources here: I/O port address, IRQ interrupt number and DMA number.

◆ **DMA**

Level	Function
DMA0	DRAM Refresh
DMA1	Unassigned
DMA2	Unassigned
DMA3	Unassigned (sometimes used for hard disk)
DMA4	Used for DMAC cascade
DMA5	Unassigned
DMA6	Unassigned
DMA7	Unassigned

◆ **APIC**

Advanced programmable interrupt controller. Most motherboards above P4 level support APIC and provide more than 16 interrupt sources, like IRQ16 - IRQ23; while some others can have up to 28 interrupt sources, such as motherboard supporting PCI-X. However, relevant OS are required to enable that function, and currently, only the OS above Windows 2000 could support that function.

◆ **IO Port Address**

There is 64K for the system I/O address space. Each peripheral will occupy portion of the space. The table below shows the I/O address assignments for part of the devices of the CPU card. As the address of PCI device (e.g. PCI network card) is configured by software, it is not listed in this table.

Address	Device Description
000h - 00Fh	DMA Controller #1
000h– CF7h	PCI bus
010h - 01Fh	Carrier Resource
020h - 021h	Programmable Interrupt Controller #1
022h - 03Fh	Carrier Resource
040h - 043h	System Timer
044h - 05Fh	Carrier Resource
060h	Carrier Resource
061h	System speaker
062h –063h	Carrier Resource
064h	Carrier Resource
065h - 06Fh	Carrier Resource
070h - 071h	Real Time Clock, NMI
072h –07Fh	Carrier Resource
080h	Carrier Resource
081h - 083h	DMA Controller #2
084h - 086h	Carrier Resource
087h	DMA Controller #3
088h	Carrier Resource
089h - 08Bh	DMA Controller #4
08Ch - 08Eh	Carrier Resource
08Fh	DMA Controller #5
090h - 09Fh	Carrier Resource
0A0h - 0A1h	Programmable Interrupt Controller #2
0A2h –0BFh	Carrier Resource
0C0h - 0DFh	DMA Controller #2
0E0h - 0EFh	Carrier Resource
0F0h –0FFh	Numeric data processor
1F0h - 1F7h	Primary IDE Channel
274h –277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2F8h - 2FFh	COM2
378h –37Fh	LPT1
3B0h –3BBh	Intel® Graphics Media Accelerator 3150
3C0h –3DFh	Intel® Graphics Media Accelerator 3150
3F6h - 3F6h	Primary IDE Channel

3F8h - 3FFh	COM1
400h– 41Fh	SMBus Controller
4D0h –4D1h	Carrier Resource
500h - 53Fh	Carrier Resource
800h - 87Fh	Carrier Resource
880h - 88Fh	Carrier Resource
890h - 89Fh	Carrier Resource
A79h	ISAPNP Read Data Port
0D00h-FFFFh	PCI bus

◆ **IRQ Assignment Table**

There are 15 interrupt sources of the system. Some are occupied by the system devices. Only the ones that are not occupied can be assigned to other devices. ISA device requests exclusive use of its interrupt. Only the plug and play ISA devices can be assigned by the BIOS or the OS. And several PCI devices share one interrupt, which is assigned by BIOS or OS. Interrupt assignment of some devices of X86 platform is shown in the table below, but it does not show the interrupt source occupied by the PCI devices.

Level	Function
IRQ0	System Timer
IRQ1	Standard 101/102 Key or Microsoft Keyboard
IRQ2	Programmable Interrupt Controller
IRQ3	COM#2
IRQ4	COM#1
IRQ5	Reserved
IRQ6	Reserved for FDD controller
IRQ7	Parallel Port
IRQ8	System CMOS/Real Time Clock
IRQ9	Microsoft ACPI-Compliant System
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	Maths Co-processor
IRQ14	Primary IDE
IRQ15	Reserved

Chapter 4 Install the Drivers

Regarding the driver program of this product, please refer to the enclosed CD.

Appendix

Watchdog Programming Guide

The board provides a programmable watchdog timer (WDT) up to 255 levels and timed by minute or second. Watchdog timeout event can be programmed to reset system or generate maskable interrupts.

The available IRQ numbers for this board are: 3, 4, 5, 7, 9, 10 and 11. Please modify the corresponding IRQ number in PCIPnP of BIOS Setup interface into "Reserved" before using.

The following describes WDT program in C language. The steps to program WDT are listed as follows:

- Enter WDT programming mode;
- Set WDT operating mode, enable WDT/disable WDT.

(1) Enter WDT Programming Mode

```
/*
    Description: the function, PreInitWDT, is used to initialize the registers relevant
  to WDT; please invoke the function before configuring and using WDT.
    Input: none
    Output: none
Note: this function will modify the value of the variable, pm_base, which will be
quoted by SetWDT.
*/

        #define     INDEX_PORT   0x4E
        #define     DATA_PORT          0x4F
        unsigned    int tmp_reg;
        unsigned int pm_base;

VOID PreInitWDT()
{
```

```
        outportb(INDEX_PORT, 0x55);
        outportb(INDEX_PORT, 0x07);
        outportb(DATA_PORT, 0x0A);
        outportb(INDEX_PORT, 0x30);
        outportb(DATA_PORT, 0x01);
        outportb(INDEX_PORT, 0x60);
        tmp_reg = inportb(DATA_PORT);
        pm_base = tmp_reg;
        outportb(INDEX_PORT, 0x61);
        tmp_reg = inportb(DATA_PORT);
        pm_base = pmbase<<8+tmp_reg; /*Get the variable pm_base for later
        use*/
}
```

(2) Configure the WDT operating mode to enable or disable WDT

```
/*
```

Description: the function, SetWDT, is used to configure the parameter required when configuring WDT to enable or disable WDT.

Input: Wmode: 0 - Configure WDT to reset mode

IRQ_NO - Configure WDT to interrupt mode. Please replace the constant IRQ_NO with the interrupt number need to be used. The available range of the interrupt number has been listed in the beginning of this chapter

Wtime: 0 - Configure WDT to time by minute

1 - Configure WDT to time by second

Timeout: 0 - disable WDT

TIME_OUT_VALUE - Enable WDT. Please replace the constant TIME_OUT_VALUE with the unit number of timeout value (0x01 ~ 0xFF)

```
*/
SetWDT(unsigned int Wmode, unsignedint Wtime, unsigned int Timeout)
```

```
{
    unsigned    int irq;

    If (Wmode == 0)
        outportb(pm_base+0x47, 0x0C);
    else
        {
        unsigned int irq;
        irq = Wmode;
        irq = irq<<4;
        outportb(pm_base+0x47, 0x80);
        outportb(pm_base+0x67, irq);
        }

        If (Wtime == 0)
            outportb(pm_base+0x65, 0x00);
        else
            outportb(pm_base+0x65, 0x80);

        outportb(pm_base+0x66, Timeout);

}
```

Troubleshooting and Solutions

NO.	Phenomenon	Troubleshooting and Solution
1	BIOS setting cannot be saved	Analysis: it could be the problem of the CMOS battery.
		Solution: measure the CMOS battery with a multi-meter; if the voltage is insufficient, replace the battery; re-set the BIOS and save again.
2	The computer can only be powered-on occasionally	Analysis: it may be caused by poor connection. Remove the power plug from power socket on motherboard, you may find that certain pin of the motherboard power has been collapsed to one side after some forceful insertion.
		Solution: power off the computer and remove the power plug; erect the bended power pin with tweezers and re-insert in the power socket. Reboot the computer and test for several times until the problem no longer exits.
3	When connecting with a USB flash drive, the system prompts that a high-speed device has been connected with a low-speed connector.	Analysis: A USB flash drive is a high-speed USB2.0; when connecting with the computer, it prompts that a high-speed device has been connected with a low-speed connector, which indicates that the connector on motherboard is regarded as a USB1.1 port.
		Solution: enable the USB high-speed transmission mode on the motherboard. Different motherboards may have different settings. Change the FULLSPEED option to HISPEED in USB device option.
4	The screen has no display after replacing with a new memory and cannot enter system; even when the former memory is re-installed, the system cannot be booted as well.	Analysis: it could result from improper operation when inserting or removing the memory and cause abnormal operation of the components on the motherboard. Focus on the circuit related to the memory on the motherboard.
		Solution: check the hardware such as memory, video card first; if it shows that the hardware are all OK, then check the circuit around the memory slot on motherboard carefully; you may find that the two pins connected with the gold finger in the first memory slot are shorted while the second memory slot is normal, then you may know that there is short circuit in the first memory slot. Remove the two pins to their original location with tweezers carefully, insert the memory, reboot the system and the system will be booted smoothly.

5	The system cannot be booted after replacing a CD-ROM.	Analysis: the data cable of the hard disk may get knocked when installing the CD-ROM, which leads to poor connection of the hard disk data cable, or the master and slave jumpers on hard disk and CD-ROM are wrongly set.
		Solution: check the data cable of the hard disk and the IDE connectors on hard disk and motherboard first; if there are no problems, then check the master and slave jumper setting. You may find that the hard disk and CD-ROM are connected with different data cables while their jumpers are all set to master; thus, the hard disk cannot be booted. Set the CD-ROM jumper to slave and then re-install it.
6	No PCI card can be detected after entering the system.	Analysis: make sure the PCI card functions normally; re-insert the PCI card or insert it into another PCI slot to see whether it is normal; find out the power type in use (AT or ATX); find out users' requirement for the PCI card voltage.
		Solution: if the PCI card functions abnormally, replace it with a new one; if it functions normally when re-inserted or inserted in another PCI slot, then there is something wrong between the PCI card and the slot. If AT power is adopted and the PCI card requires 3.3V voltage, then the AT power shall be replaced with ATX power because AT power cannot provide 3.3V voltage. (Suggestion: when purchasing power supplies, please check whether the PCI card in use requires 3.3V voltage or not).
7	No peripheral devices can be detected.	Analysis: devices are not connected; no drivers are loaded; devices are broken.
		Solution: check whether the cable between the device and the motherboard is normal; if it is normal, replace it with a new cable to make sure the connection is OK. Re-install the device driver and check whether it can be recognized; check whether the device is normal; if the device is normal, then check whether the device is compatible with the motherboard.